ALM08

A chemometric study on the chemical and nutritional profile of *Fucus spiralis* L. juvenile and mature life-cycle phases

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Fucus spiralis L. is an edible brown macroalga with a wide distribution range, including coastal Europe, Atlantic Islands, North America, Morocco and Western Sahara [1]. It is very rich in fibre, minerals, phlorotannins, sterols and fatty acids, which are associated with its nutritional value [2], and exhibits significant pharmacologic proprieties, presenting not only antioxidant and anti-inflammatory activities but also cardio protective, anti-obesity and antidiabetic effects [3]. Nevertheless, the chemical profiles of *F. spiralis* life-cycle phases have not been explored. Therefore, the main goal of this research was to assess the *F. spiralis* chemical composition in juvenile and mature phases by GC-MS analysis, and to identify the differences and/or similarities using the principal component analysis (PCA) tool.

The GC-MS profiles of each life-cycle phase as well as important data to improve the use of *F. spiralis* are disclosed. In both phases, alkanes, fatty acids, alditols, sterols, monoglycerides and δ-tocopherol were identified, although the content of each compound and/or class of compounds is life-cycle phase dependent. For example, desmosterol and stearic acid are produced exclusively in the juvenile phase and the sterol content in the juvenile phase is statistically lower than in mature phase. Moreover, the content of 1-palmitoylglycerol and 1-oleoylglycerol in *F. spiralis* is higher in juvenile phase being these compounds reported for the first time in this seaweed. Simultaneously, PCA allowed the differentiation between the analysed *F. spiralis* life-cycle phases along with the detection of the compounds that contribute to this distinction (Fig. 1). Our study confirms that *F. spiralis* is a source of phytochemicals with recognised health benefits so its use in dietary is recommended. But, its life-cycle phase should be considered before the collection moment.

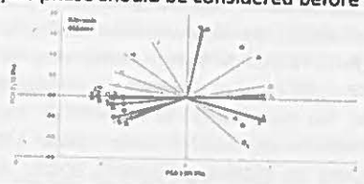

Fig.1. Score plot of the PC 1 *vs.* PC 2.

Acknowledgments:
This study was financed by Portuguese National Funds, through FCT – Fundação para a Ciência e a Tecnologia, and as applicable co-financed by the FEDER within the PT2020 Partnership Agreement by funding the Organic Chemistry Research Unit (QOPNA) (UID/QUI/00062/2013) and the cE3c centre (UID/BIA/00329/2013). We would like to thank also to A. I. Neto by harvesting and identify seaweed and Paulo Silveira for PCA results.

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ALM09

Impact of ion exchange resin treatment on red wine sensory profile, phenolic and mineral composition

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Ion exchange resins presented a polymeric matrix with covalently attached ionized functional groups, electrically neutralized by movable ions of opposite electrical charge present in the wine. Cationic resins in acid cycle are the only authorized by the International Organisation of Vine and Wine for wine treatment, according to the Resolution 43/2000 [1] for wine treatment. However, in order to get an equilibrated wine the wine treated by ion exchange resin must be mixed with a percentage of untreated wine.

In this study was used a red wine from the Douro Valley and a pH-Stab/AEB laboratory ion exchange resin. The aim of this work was to evaluate the impact of ion exchange resins on red wine phenolic composition, mineral composition, chromatic and sensory characteristics.

The experiment was carried out at Gran Cruz Winery and the percentage of treated red wine was 30% (total of 1000L). Conventional oenological parameters were determined using a FTIR Baccus, chromatic characteristics were determined using the Cielab method according to OIV [2], total phenols, flavonoids and non-flavonoids were determined according Kramling and Singleton [3] and the phenolic profile was determined by HPLC according to Guise et al [4]. Finally, sensory analysis was performed by a trained panel of 7 members and fifteen attributes - visual (limpidity, colour), aroma (aroma intensity, fruity, floral, vegetable, oxidised, chemist) and taste (sweetness, acidity, bitterness, flavour intensity, body, balance, persistence) - assessed using a ten-point intensity scale (ISO 4121, 2003).

Red wine treated with ion exchange resins, presented lower concentration of phenolic compounds compared to untreated one. Calcium, magnesium and potassium decrease in wines treated with ion exchange resin (Table 1). Regarding sensory characteristics, wine treated with ion exchange resins seems to improve some sensory attributes, namely aroma and taste.

Wine Sample	Calcium	Magnesium	Potassium	Sodium
Control	52.15±2.42^a	86.96±0.36^a	1092.68±8.72^a	36.70±0.28^a
Resin	31.57±2.42^b	51.67±0.36^b	696.93±1.99^b	37.10±0.71^a

Table 1. Calcium, magnesium, potassium and sodium concentration in mg/L of control wine (Control) and wine treated with ion exchange resin (Resin).

Different letters for statistical different means, $p<0.05$; Tukey-test

Acknowledgements
This work was partially funded by the Chemical Research Center (CQ-VR, UTAD). Additional thanks to AEB Bioquímica Portuguesa and Gran Cruz Winery.

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